# SCIENCE & GOVERNMENT REPORT

**The Independent Bulletin of Science Policy**

Vol. III, No. 6 | P. O. Box 21123, Washington, D.C. 20009 | March 15, 1973

# Common Market R&D: Still Puny by U S Standards

*Brussels.* Mr. Nixon's parsimonious treatment of the American research enterprise has evoked in the US alarmist visions of the newly enlarged Common Market lapping the field in science and technology.

The fears, however, have little basis in fact, for here at Market headquarters, while the Eurocrats go on issuing reports and creating new administrative slots for the incoming English, Danes, and Irish, efforts to pool or even coordinate Europe's multifarious research endeavors appear to be as relevant to the real world as the game of Monopoly is to the real estate business.

As ever, the governing principle in the R&D affairs of the Market nations remains that when major commercial profit appears likely, as is the case with nuclear power, the member states generally go their own way, which accounts for the chronically anemic state of Euratom, the Market's agency for developing atomic energy; but when nothing but plain, pure science is involved, whether within the Market or among its members and neighbors, the odds are better for cooperation, which accounts for the thriving state of the high-energy physics European Center for Nuclear Research (CERN) and the fledgling European Molecular Biology Organization (EMBO), both outside the Market but close to it.

Among the latest developments in Market R&D affairs is the further pruning of the staffs of Euratom's four research establishments, from 2000 to 1600 professionals, and the twisting of the Common Market Treaty so as to allow them to take on non-nuclear research tasks. But the move has not been accompanied by any great sense of mission or feeling of being needed, as may be inferred from the preface to the latest pamphlet production of the R&D bureaucrats here, "Objectives and Instruments of a Common Policy for Scientific Research and Technological Development," which states: "The proposed reduction in size is not, and must not be, seen as a first step

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## *NAS Members Hit Bombing*

Some 345 members of the National Academy of Sciences, constituting more than a third of the entire membership of the nation's most prestigious scientific body, have sent a petition to the President and members of Congress deploring the extensive bombing of North Vietnam in the weeks preceding the cease-fire.

The petition states, in part:

"We, members of the National Academy of Sciences, are revolted by, and utterly condemn, the massive bombing of cities in Indochina, acts made possible by science-based technology. This killing of civilians and destruction of their means of livelihood dishonors our country."

The petition was originated by a small group at Harvard which included E. Bright Wilson, Dudley Herschbach, and William Klemperer, all from the chemistry department; and two Nobel laureates, Edward Purcell and Konrad Bloch. The signatures were obtained even though the cease-fire intervened because, as one originator expressed it, the bombing "had happened" and was "not something to wipe off the slate."

## In Brief

A soon-to-be-published report by Herman Kahn's Hudson Institute cites France as "the dynamic center of European revival," says that it has the "fastest growing economy among the developed nations, except for Japan," and that by 1980, France will attain the presentday "personal wealth" of the US. . . . **While the research community bemoans the pace of federal R&D spending, NSF's statisticians have come up with a bright interpretation: "In 1973," they state in *An Analysis of Federal R&D Funding by Function*, "Federal R&D expenditures are scheduled to grow faster than total Federal outlays for the first time since 1965." A footnote explains that the figures are based "on total Federal outlays excluding interest, general revenue sharing, special allowances, and undistributed adjustments."** . . . Rising costs, a drop in subscriptions, and the loss of several NSF grants have caused the American Institute of Physics to cut back some of its activities. AIP's Washington office has been closed, and the Education Division has sharply reduced its size and activities. . . . **One of the first studies to be undertaken by NSF's recently created National R&D Assessment Program will examine the relationship between industrial R&D expenditures and profits.**

**COMMON MARKET R&D** *(continued from page 1)*

towards liquidation, but rather as the painful but necessary prelude to convalescence, and a requisite of its future development."

The content of that future development is not, however, regarded with any certainty or confidence, and words written and spoken about it tend to have a vaporous quality that neither offends nor illuminates. Thus, one of the top Market officials for Research and Education—formerly Research and Industry, but Industry was split off when it became necessary to create high-level jobs for the newly admitted members—told SGR of the need to perform research related to the "quality of life and industrial competitiveness." He noted, too, that "we should not have a research policy for its own sake but all research activities should be on a sectorial basis," meaning that they should be relevant to specific objectives. Much is said about establishing "workshops" and encouraging European scientists to depart from their customary pattern of mixing more with American scientists than with each other, the catchword in this latter regard being "mobility."

But what it all comes down to is that the nine member nations of the Market feel no great spur to establish themselves as a competitive R&D giant to face the US or even to compete with Japan or the Soviet Union.

As far as expenditures are concerned, the figures for 1970—which are the most recent that are available—show that the US government spent $17.9 billion on R&D, while the original Common Market Six, with England added, spent a bit under $6 billion. Of the US sum, about half—$8.66 billion—was for military-related research, while the Europeans spent something over $1 billion in this category. But even if the "spinoff" argument is heavily discounted, the US lead remains formidable. Figures for R&D expenditures by industry are not especially reliable, but it is probable that the proportions are similar. And even when account is taken of the fact that it is cheaper to perform research in Europe—though the margin is narrowing—the disparity between US and European efforts continues to be sizeable. As far as trends are concerned, a recent analysis by the Atlantic Institute concludes that "Whatever is said regarding the relative figures of resources, material and human, in absolute terms the gap between the US and Europe is widening. Moreover, the efforts in Europe are uncoordinated. The development of (European) international cooperation in R&D shows a negative trend, which seems to suggest a decline of interest for European cooperation."

Regarding major technologies, the Institute's analysis notes that the Euratom nuclear power effort was dominated from the start by France's desire to pursue a natural uranium process so as to be free of the US's domination of the enriched uranium market; and when France finally abandoned the process, Euratom found itself exclusively equipped for an obsolete role. In space research, it is noted that "Every deviation from the envisaged budget figure has to be approved by the representatives of the national bodies. This means that technical questions are turned immediately to political ones"—which, among other things, accounts for very costly but so far unproductive efforts to get into the launcher business. As for computers, the report observes that "Little successful European cooperation exists in that sector. Up to now, the public support in Europe has been directed more toward national programs, which has had a rather disintegrating effect. Today, 80% of the computers in Europe originate from abroad." And, in regard to aircraft, the conclusion was that, while the European Community "is as good as the US," its competitive performance is hampered by small production capabilities, complicated decision-making through national representatives, and limited durability of cooperative agreements.

Complementing the absence of Market-wide cooperation in big technology is the failure to develop any sort of umbrella organization that will play the role of the US National Science Foundation in academic-based science. Within Market headquarters here, a proposal has been raised to establish a European National Science Foundation, but as one official put it, "We'd like to have a Science Foundation, but there is no support for it." So, in the usual style of trying to knit things together without treading on national sensitivities, efforts are currently limited to convening meetings of top research administrators from the member nations. As for the role of Education under the heading of Research and Education, the straight answer is that the Market bureaucracy thinks it would be desirable to develop common standards for curriculum and certification, but the ministries of education in the member nations have shown little interest.

As one official noted, the heads of the member states have declared 1980 to be the date for political union, but he himself thought 1990 was a more realistic mark. In any case, speculating on whether the Market will eventually become an integral bloc of one sort or another has developed into something of a minor semi-academic industry. But what is clear at this point, as far as R&D and related activities are concerned, is that members feel no great urge to coalesce and that whatever happens, will happen slowly. The present fiscal plight of American science and technology makes it tempting to conjure up the image of a great R&D giant getting itself together across the Atlantic, but it just isn't so.—DSG

# New Electric Institute Assailed as Conspiracy

The Electric Power Research Institute (EPRI), an organization formed last year to carry out cooperative research for the electric utility industry, was described as a device to stifle innovation and suppress new technologies in testimony before the Senate Commerce Committee earlier this month.

The charge was made by William H. Rodgers Jr., visiting professor of law at the Georgetown University Law Center, and was seconded by consumer advocate Ralph Nader. But it brought sharp denials from industry leaders who claimed that their cooperative venture would become such a "success story" that it would obviate a government program to spur power research.

As Rodgers, who is the author of a forthcoming book that explores technology suppression, viewed it, "a centralized research program dominated by the private power companies is admirably suited for technological suppression . . . Group researchers are quite capable of stifling innovation and competition, rewarding doctrinal sychophants, investigating politically favorable hypotheses, and withholding funds from imaginative proposals in the name of avoiding duplication." Rodgers supported his allegations by quoting from internal industry documents and citing alleged "technological conspiracies" in a number of other industries, all of which indicated to him that the power industry could not be trusted to do the job and that a strong government program was needed.

Quite the opposite view was presented by Chauncey Starr, dean of the school of engineering and applied science at UCLA, who was recently appointed the first president of EPRI. Starr argued that his new research institute would be "superior" to a federal agency, largely because it would be more "responsive" to the research needs of the utilities whereas "the arms length role of a federal agency is likely to result in R&D programs which become politically inflexible, outmoded by outside changes, and not properly focused on industry needs." And he claimed that it is "much easier to get a private corporation to take a long point of view about how it serves its needs than it is to get a government agency to do this, because the government agency repeatedly says we have a budget ceiling, and within that budget ceiling, we can't start anything new."

The debate took place on March 1 during hearings on S. 357, a bill to establish a federal power research and development program that would be directed by a five-member board and financed by a 1 per cent charge added to the bills of electricity consumers. The legislation is sponsored by Sen. Warren Magnuson (D-Wash.), chairman of the Commerce Committee, and seven others, including Sen. Ernest F. Hollings (D-Fla.), who chaired the hearings.

At hearings on the same bill a year ago, industry leaders urged the senators to defer action for a year so as to give the utility industry a chance to demonstrate that it could carry out an expanded industry-wide R&D program on a voluntary basis, thus making a duplicative government program unnecessary and even contrary to the public interest.

Not surprisingly, the assessments of the industry's progress differed markedly. Shearon Harris, chairman of the Carolina Power & Light Co. and a member of the board of directors of EPRI, expressed "a profound sense of satisfaction in the industry's accomplishments." But Rodgers contended that "since the hearings last year the principal activities of the Electric Power Research Institute have been a couple of press releases and one meeting of the board of directors, a record of somnolence evidently not yet broken by the traditional first signs of life of any organization—the ordering of stationary with an appropriate letterhead."

Rodgers may have overstated the case. There was later testimony that the board of directors had met six times. But it was clear that EPRI's first year had been largely concerned with organizational matters. The new institute was incorporated in March 1972. A search was then conducted to find a distinguished scientist-administrator to head the staff, with the result that Starr was named president as of Jan. 1, 1973. Starr had previously had a 20-year industrial career, including a stint as vice-president of North American Rockwell; he is currently vice-president of the National Academy of Engineering, the nation's top honorific body for engineers. Starr is still temporarily headquartered at UCLA, but he is severing his connections with the university and is in the process of assembling an administrative and technical staff for EPRI. The EPRI board is also in the process of naming a 25-member advisory council, which will include academics, government officials, environmentalists, regulatory officials and others.

Starr told the senators that the new institute will contract for work by outside research organizations and will conduct some in-house research of its own. He said the EPRI professional staff will probably number between 100 and 200 individuals, about half of whom will be EPRI employees and the other half researchers on leave from universities, manufacturers, utilities and government agencies. Starr said EPRI may also operate "unique one-of-a-kind facilities that either exist now or may be built in the future." These would

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## NEW ELECTRIC INSTITUTE

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be located "in a variety of regions, wherever both talent and existing facilities may make the work most productive."

Financing for the new institute is to be provided by asking the power companies to contribute according to a formula based on their kilowatt-hour sales. If the commitment is met fully, EPRI would have about $75 million in 1973 and $119 million in 1974. (Not all of that is new money, however. Senate staffers estimate that most of the $75 million is actually money that the utilities had decided to spend even before EPRI was established.)

Utility officials cited a number of research areas that they deemed "critically important," including breeder reactors, coal gasification, controlled fusion, and pollution control technology, among others. But Rodgers and Nader suggested that the electric power companies were unlikely to work very hard on fuel cells, solar energy, pollution control or other technologies that might threaten their existing capital investment and their traditional ways of doing business. Nader also said efforts to study energy conservation would "run counter to the thrust of producing more and selling more."

To support his allegations about "the dangers of joint research," Rodgers cited a number of "documented disasters" in which various industries launched "technological conspiracies to defend destructive technologies." These cases included the "smog conspiracy," which resulted in a Justice Department lawsuit against the automobile manufacturers for allegedly suppressing knowledge about pollution control devices; an alleged conspiracy to suppress R&D competition in the aerospace industry, which led last year to a Justice Department suit against 20 aircraft manufacturers and a trade association; a joint research effort on air pollution in the copper smelting industry, which has been placed under the direction of a copper company president "who has worked overtime to undermine EPA's air pollution standards for smelters;" and a joint industry research effort on solid waste problems which has been placed under the leadership of a corporate chairman who is "one of the leading figures committed to protecting throw-away containers."

Rodgers also cited "devastating documents" written by top executives of the electric power industry which, he said, belied "the sugary promises of progress" made by the industry in Congressional testimony. Two of the documents—an internal memorandum and a letter—were authored by Philip Sporn, former president of the American Electric Power Co., in the mid-1960s. The documents described as "fallacious" the idea that a centralized research program would be beneficial, argued that "the past record of the industry (in conducting research) is not one to inspire confidence," and predicted that the industry would encounter "disaster if its research is going to be dictated by one centralized source." Another document was a 1964 letter written by American Electric President Donald Cook to the presidents of General Electric and Westinghouse accusing them of promoting gas appliances and adding: "This is necessarily a source of deep concern to those of us who have pledged our complete allegiance to electric power and who continue to devote 100% of our interest and attention to promoting the all-electric way of life." This letter suggested to Rodgers that it is "precarious ... to rely upon those who promote the all-electric way of life to rule the research that in large part will dictate the nation's energy options and the consumption of its natural resources."

Both Rodgers and Nader supported S. 357, though they offered many suggestions aimed at improving it. The federal program is needed, in Nader's opinion, because "the proposal of Dr. Starr's institute, even taken at face value, is inadequate" in terms of funding, public disclosure, consumer participation, and conflict-of-interest.

But the industry spokesmen continued to oppose the bill, largely on the grounds that a federal program financed by a tax on consumers might make it impossible for the industry to raise money for EPRI, for regulatory commissions might balk at granting the utilities a rate increase for R&D over and above a federal tax for the same purpose. Sen. Hollings called this argument "specious."—PMB

### *A Rose by Any Other Name . . .*

The Federation of American Scientists objects to being labeled "semi-dissident." Federation Director Jeremy J. Stone complained that after SGR used this phrase to describe the FAS, other publications picked up the terminology as well, a circumstance which he viewed as a threat to the organization's good name. At a press conference in Washington on March 8, Stone pointed out that the Federation included among its 4500 members about 40 per cent of the nation's Nobel laureates and a slew of former high government officials. "If you want to describe us, 'a unique public interest lobby' is suitable," Stone told the assembled reporters. " 'Semi-dissident' is not." The press conference had been called to issue a challenge to President Nixon to disclose the full details of American use of weather modification as a weapon of war in Vietnam.

# Agricultural Group Endorses Peer Reviews

A high-ranking advisory committee has recommended greater use of peer review to ensure quality in agricultural research in the wake of criticisms by a National Academy of Sciences committee that there is "a shocking amount of low-quality research in agriculture."

The endorsement of peer review, which has not been widely used in the agricultural community, was made by the Agricultural Research Policy Advisory Committee (ARPAC), a group which consists of top research officials from the Department of Agriculture and scientists and administrators from the land-grant colleges. ARPAC had been asked to review a 464-page report prepared by the Academy last year which described the state of agricultural research as "appalling" and made 20 recommendations for improvement. (SGR, Vol. III, No. 1).

Although the initial response of some agricultural scientists to the Academy report was anger and annoyance at the harshness of the indictment, ARPAC, at its most recent meeting, Feb. 20, adopted a rather mild response. ARPAC made no comment concerning the Academy's criticisms; instead, it simply reviewed each of the Academy's 20 recommendations, concluding that they were generally sound, and that the agricultural community was already pursuing most of them, but that improvement was, of course, always desirable.

ARPAC expressed sympathy with two of the Academy's major proposals—the need for peer review, and the desirability of establishing a competitive grants program.

With respect to peer review, the Academy committee had complained that the agricultural community relies too heavily on in-house administrators and scientists to evaluate projects and personnel, in contrast to the practice at NSF and NIH of soliciting advice from competent researchers throughout the country. ARPAC said it "agrees with the implied premise . . . that peer evaluations (of personnel) are not always complete nor do they always involve adequate segments of the scientific community;" it urged "involvement of the broader scientific community in such efforts."

With respect to the Academy's recommendation for a major increase in competitive grants funding by the Agriculture Department, ARPAC recommended that the Department's administrators continue to assess the feasibility of such grant funding, and that "one or another of various alternatives for peer evaluation be considered for use with other decision-making processes to help assure the excellence of the research which is funded through this mechanism." However, since the Agriculture Department plans to decrease its spending for research in fiscal 1974, there would seem little likelihood that funds will be found to support "a greatly increased level" of grants, as desired by the Academy.

On other recommendations, ARPAC agreed that active researchers should be involved in decision-making; administrators should be recruited from the scientific community; small, isolated, unproductive research stations should be eliminated; research facilities should be concentrated near college campuses or other major research centers; federal support for the agricultural experiment stations should increase in proportion to the Department's in-house research; various steps should be taken to enhance "professional improvement" of agricultural scientists; inflexible earmarking of funds for research on specific commodities should be limited; steps should be taken to improve communications between agricultural scientists and basic researchers; and mechanisms for project and program evaluation should be strengthened.

The recommendations by ARPAC are purely advisory to the Department of Agriculture and to the National Association of State Universities and Land-Grant Colleges. But they are expected to lead to further action by departmental officials aimed at spurring implementation.

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## FAS Hits Weather Warfare

The 4500-member Federation of American Scientists (FAS), which describes itself as "a non-profit public interest lobby," has urged the Nixon administration to "disclose what it knows" about the use of weather modification as a weapon of war in Vietnam by this or previous administrations.

At a Washington press conference March 8, the FAS released the text of a letter to President Nixon that was supported by the Federation's governing council and by a petition signed by some 750 scientists who are not members of FAS but who are concerned about the military implications of weather control.

Gordon J. F. MacDonald, a former member of President Nixon's Council on Environmental Quality, and Herbert Scoville, Jr., a former CIA and arms control official under previous administration, both expressed concern over "widespread and often authoritative" reports that cloud seeding had been used in Indochina. They argued that the cease-fire in Vietnam makes this an ideal time to seek an international agreement to bar weather warfare "before it is too late" and weather becomes "a terrifying weapon."

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# NSF Opposes Anti-Impoundment Bill

It was hard to believe that the National Science Foundation (NSF) and its university clients were talking about the same legislation when they testified earlier this month on H.R. 3610, a bill that would prevent selective impoundment of NSF funds.

On March 7, NSF Director H. Guyford Stever told the House subcommittee on science, research and development that the proposed legislation would have "a devastating effect" on important programs, would "seriously threaten" the close ties between NSF and the scientific and educational communities, and would require "major disrupting changes in the way that both NSF and its awardees do business."

On March 8, a spokesman for eight major educational associations—including the Association of American Universities, the American Council on Education and the National Association of State Universities and Land-Grant Colleges—endorsed the legislation as "a superior vehicle." And a spokesman for the Associated Colleges of the Midwest and the Great Lakes Colleges Association testified that beneficial programs had "clearly suffered" because of impoundment of funds, so "it goes without saying that we enthusiastically support his bill."

The legislation at issue was introduced by Rep. John Davis, chairman of the House subcommittee, as an alternative to the Administration's 1974 authorization bill for NSF. It would allow NSF to authorize $59 million more than the Administration bill; and it would require that, if any funds are impounded (withheld), they would have to be withheld proportionately among 13 budget categories rather than concentrated in programs that the administration dislikes. (SGR, Vol. III, No. 4).

In opposing the legislation, Stever claimed that the 13 "fixed, inflexible" budget categories would make it difficult for NSF to change the distribution of its funds as conditions change. He also argued that wording which applied the legislation to expenditures as well as obligations would cause "major disruptions," partly because NSF does not collect expenditure data until after the fact, and partly because the performing institutions are traditionally allowed to determine the timing of their expenditures.

Stever further contended that the bill would require NSF to keep its obligations in the 13 budget categories continually in balance, a difficult feat in view of the fact that NSF programs have wide seasonal variations in their spending patterns. However, this interpretation is disputed by subcommittee staffers, who say they will insert clarifying language that the balance must be achieved by the end of the year, not maintained continuously.

The subcommittee has not fully committed itself to the Davis bill, but it expects to do something to protect the NSF budget against selective impoundments.

## *Cancer Panel Finds Budget is Tight*

The National Cancer Institute is widely reputed to be so laden with cash that government health officials have been laying plans to have it pick up the costs for worthy projects beyond the means of NCI's neighbors at the National Institutes of Health (SGR Vol. III, No. 5). But the most recently released minutes of the President's Cancer Panel indicate that NCI is bound by the principle that ambition swells to exceed any budget.

According to minutes of the meeting, held Jan. 3 to discuss spending plans for the fiscal year that ends June 30, the panel was "concerned that the fellowships and training grants were not funded at a level which would provide an adequate supply of (cancer control) manpower, but there appeared to be no way to increase this funding within the overall allowable expenditure.

"... the panel was concerned that the funding for Immunology was not adequate to meet the minimal plans of the Associate Director of Immunology, and the Director was urged to see if an additional $2 million, at a minimum, could be added to the funds available for cancer biology and diagnosis so that the Immunology Program could be funded to this extent, which the panel regarded as minimal.

"The panel was concerned also that there was very little room in the budget for additional task forces or for the growth of existing task forces ...

"... an effort will be made to reduce construction expenditures somewhat in order to raise the overall control program to the $8 to $10 million level, at a minimum.

"So far as construction is concerned, the remaining figure available for that purpose is also considerably less than that needed for the funding of projects but these cuts will be necessary if we are to maintain the $432-million level"—which is what the panel estimated the obligation ceiling for the year would be.

# Science Reorganization Has Economic Goal

The Nixon Administration has apparently decided that the chief role of science and technology is to promote economic development. That, at least, is the upshot of remarks made by Frederick V. Malek, deputy director of the Office of Management and Budget (OMB), in Congressional testimony on Feb. 26.

Malek was testifying in behalf of the reorganization plan which abolished the White House Office of Science and Technology and transferred many of its functions to the director of the National Science Foundation.

In explaining why the reorganization plan calls for the NSF director, in his capacity as science adviser, to report to George Shultz, the President's chief economic assistant, Malek said: "The rationale for having the science adviser reporting through Dr. Shultz rather than through Mr. Erlichman or some other principle members of the staff is that it is our feeling that the key impact of science and technology has to do with the economy and the development of the economy as a whole."

Malek stressed that the new science adviser would not be restricted to economic affairs, however. "He would also, from time to time, get into various domestic areas, and he would also, in some instances, get into matters of national security, where he and his staff have the capacity to contribute."

The hearing was a relatively tame affair conducted by the subcommittee on legislation and military operations of the House Committee on Government Operations. All qualms expressed by subcommittee members were brushed aside with assurances by the administration that the new organization will be more effective than the old.

Did the reorganization imply a downgrading of scientific advice, since the new science adviser will report through Shultz whereas the old one, in theory at least, had the ear of the President? No, said various witnesses, because the science adviser in recent years hasn't really talked directly to the President much anyway, and besides, the new science adviser "will see the President from time to time."

Would the busy economist Shultz really be able to devote much time to scientific matters? Yes, said Malek, because "I have never ceased to be amazed by the ability of Dr. Shultz to professionally and proficiently handle the wide range of tasks."

Would the NSF director really be able to influence technical affairs in agencies that are much larger and more influential than his own. Yes, said Malek, because "the prestige and resources of Dr. Shultz' office" will ensure a high degree of cooperation.

Would NSF now supply the same kind of technical advice to OMB that formerly came from the Office of Science and Technology—advice that was often invaluable in assessing the technical merits of agency proposals? Yes, said OMB official Malek, "I would be very disturbed if I felt that we were not going to be able to rely increasingly on the National Science Foundation for advice and guidance in the scientific area."

The reorganization will take effect July 1 unless Congress specifically disapproves it. Thus far no one has even hinted at the possibility of introducing a disapproving resolution.

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## *NSF Reports Shift in Industrial Basic Research*

NSF's latest survey of industrial R&D concludes that spending and employment are going up, but the trend in industrial basic research "is more toward shorter-term, more revelant, and hence more economically justifiable projects."

Based on a canvass of R&D officials in 55 of the largest corporations in the country, the report states that company-funded R&D is projected to increase by 22 percent between 1972 and 1975, to a record level of approximately $14 billion annually, and that in the same period, industrial employment of scientists and engineers will increase from 240,000 to 260,000. It adds that "The downward trend of employment on company-supported basic research, which began in the midsixties, has apparently stabilized." Company officials reported virtually no change between 1971 and 1972, but expect employment in basic research to rise about 10 percent between 1972 and 1975.

The report states that "The decline in corporate earnings during the late sixties and early seventies exerted a significant negative influence on basic research volume. Apparently, company management believed that research could be cut back for a short period of time without serious long-range consequences . . . Some companies, although continuing to perform basic research, question whether the results are worth the cost. They pointed out that the company performing the research frequently does not receive the full benefit from a successful project, since the results accrue to a wider group of users . . .

"Government R&D policies may have important implications for company basic research programs", the report states. "Since compliance with federal regulations has led to increased technical costs for many firms, some officials stated that their basic research effort has been cut back."

A 4-page summary of the survey, cataloged NSF 73-301, is available without charge from the Industry Studies Group, Division of Science Resource Studies, NSF, 1800 G St., N.W., Washington, D.C. 20550.

## Radical Wins Compensation

Radical physicist Charles Schwartz, who was dropped from summer employment at the University of California's Lawrence Berkeley Laboratory because of his role in a "free speech" controversy, has won a court judgment requiring the laboratory to compensate him for lost salary.

Schwartz, who is a physics professor at UC Berkeley, was working at the AEC-financed laboratory during the summer of 1970 when he was briefly suspended for organizing two noon-hour seminars dealing with political issues despite a laboratory rule that limited such meetings to technical matters. In 1971 and 1972 he was refused summer employment, allegedly because he had become "non-productive" in his field of theoretical physics and because budgetary stringencies required his elimination from the list of "summer employables."

However, on Feb. 20, 1973, the Alameda County (Calif.) Superior Court ruled that Schwartz' status had been changed "because of his constitutionally protected political activities." The court ruled that Schwartz was entitled to compensation for lost employment in 1970, 1971 and 1972. Schwartz estimated the total at about $10,000, but the final judgment will depend on further findings of fact.

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